Sima Products Corporation
140 Pennsylvania Ave,
Bld #5, Oakmont PA 15139
412-828-3700 800-345-7462
www.simacorp.com

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Printed in USA

p/n 21695 rev 03.09

SVS-1B Volume Stabilizer™

now with Enhanced Sound Circuitry

User Manual

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Limited Warranty

Sima Products Corp. (“Sima”) warrants that if the accompanying product proves to be defective to the original purchaser in material or workmanship within 90 days from the original retail purchase, Sima will, at Sima’s option, either repair or replace same without charge (but no cash refund will be made). To enforce warranty you must deliver, mail or ship the product, together with both the original bill of sale and this limited Warranty statement as proof of warranty coverage to:

Sima Products Corp.
Att: Customer Service
140 Pennsylvania Ave. Bldg. #5
Oakmont, PA 15139
Phone: 800-345-7462 FAX : 412-828-3775

It is recommended that you call Sima at the number listed above to obtain a return authorization number.

Limitation of Liability and Remedies

Sima shall have no liability for any damages due to lost profits, loss of use or anticipated benefits, or other incidental, consequential, special or punitive damages arising from the use of, or the inability to use, this product, whether arising out of contract, negligence, tort or under any warranty, even if Sima has been advised of the possibility of such damages. Sima’s liability for damages in no event shall exceed the amount paid for this product. Sima neither assumes nor authorizes anyone to assume for it any other liabilities.Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. ***Volume Stabilizer is a trademark of Sima. © 2003 Sima***

Typical Questions (cont.)

Why are the attack and decay time constants different?

The attack time is the time for the SVS-1B to respond to an increase in volume. It needs to be very fast in order to “catch” a sudden burst of music. The attack time constant of the SVS-1B is 2 msec (0.001 seconds) and is an exponential shape so that the slope (change of db per second) increases with larger changes of music volume. Therefore, a loud burst will cause the unit to reduce the volume more quickly than a small volume change. This provides a more natural sound.

The decay time is the time for the SVS-1B to turn the volume “up” after loud music. This is much longer (about 5 seconds) than the attack time. The slope is constant so the volume changes smoothly, just as you would do. This prevents “pumping” and “breathing” sounds associated with conventional compressors and other such devices.

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Typical Questions

What is the difference between the SVS-1B Volume Stabilizer and compressors, companders, limiters, expanders, and automatic gain controls?

The key difference is in the purpose of how each used.

- Compressors are typically used for two reasons: 1) To be part of a COMPANDing system to eliminate tape hiss (in which music is COMPressed then recorded on to tape and exPANDED when played back) and 2) To make radio stations sound as loud as possible. Here multi band compressors are used which maximize loudness at the expense of affecting the spectral content of the music; hence everything sounds flat and dull. The Volume Stabilizer, on the other hand, has been designed to provide an improved sound for listening.
- Limiters simply clamp audio signals above a certain level, thus removing all music dynamics. These are typically used at radio station to stay within FCC modulation limits.
- Expanders increase the dynamic range of music. These were popular when all music had to be compressed to fit onto LPs and tapes (with 45 to 65 db of dynamic range). Now with CDs, HiFi Video tape, DAT, MiniDisc, and DCC, it is no longer necessary to compress the source. Music is now recorded with its full dynamic range.
- Automatic gain control devices are compressors with an infinite compression slope, so they completely remove the dynamic range from music. In the MAX position, the SVS-1B also provides a flat output vs. input, yet retains the instantaneous dynamics of the music.

Warning

- To prevent fire or electric shock hazard, do not expose the unit to rain or water.
- Use only with the supplied power transformer.
- Do not cycle power at high volume settings as this could possibly cause loud turn on/off surges

This package includes:

The SVS-1B, AC adapter, an audio connecting cable and this manual. If any of these items is missing or damaged, contact Sima customer service at 800-345-7462.

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Specifications

Frequency Response	20 Hz to 20 KHz, +/-3 db
Signal-to-noise ratio	More than 70 db, A weighted
Total harmonic distortion	Less than 0.2 % THD at 1 KHz
Input impedance	200 Kohm
Input level	0.55 V rms
Output impedance	1 Kohm
Maximum input level	Greater than 2 V rms
Channel separation	More than 60 db
Volume stabilization effects	
@ Max	
Maximum gain	+20 db (input = .25 mv rms [-70 dbm])
Maximum reduction	-20 db (input =3 V rms [+12 dbm])
Volume Stabilization ratio	Norm - 2:1Max - approx. 10:1 to 1
Zero gain level	0.35 V rms
Signal polarity	Positive (non-inverting)
Time constants	
Attack	2 msec
Decay	About 5 seconds
Power requirements	12 vdc, 200ma
Transformer input	120 vac, 7.2 VA
Unit dimensions	Approx. 5.5" x 4" x 1.6" (w/d/h)
Operating temperature	40 to 110 deg F
Supplied accessories	Power transformer with 6' cord

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Troubleshooting

Problem	Possible Solutions
Active light is off	Be sure the Active/Bypass switch is Active (in position) Check that the power jack is plugged into the SVS-1B Check that power transformer is plugged into a working outlet and the power switch on the rear panel is on.
Unit works in Bypass mode but no sound in the Active mode even though the Active light is on.	Check that the input and output cables are not reversed.
More noise or hiss is present during quiet passages with SVS-1B active than when bypassed	Normal because the SVS-1B increases both the signal and any noise or hiss with the signal. At normal levels in normal listening environments, this slight additional noise will not be heard.

Introduction

Congratulations on purchasing the SVS-1B Volume Stabilizer from Sima. It has been designed for easy installation and use.

Please read pages 10 to 15 for the proper hook up and operation of the SVS-1B before using the unit. For more technical information on how the unit operates, refer to the Technical Information Chapter starting on page 16.

The SVS-1B is the ideal accessory for audiophiles who want to decrease the volume fluctuations between quiet and loud portions of music or audio but still want to maintain the dynamics of the music. The SVS-1B has been designed to work in your home or home theater system and with other devices like satellite receivers. It allows any source to be optimally recorded onto cassette tapes, DAT, DCC and MD discs. Also it can be used while listening to music at normal levels. With home theater systems, the SVS-1B maintains a constant volume level, eliminating the need to constantly adjust between loud and quiet scenes.

The SVS-1B Volume Stabilizer has been tested with a wide variety of sound sources and has been optimized for excellent sound reproduction without a “compressed” sound. And now with the new enhanced sound circuitry, the unit responds like the human ear for a more natural sound.

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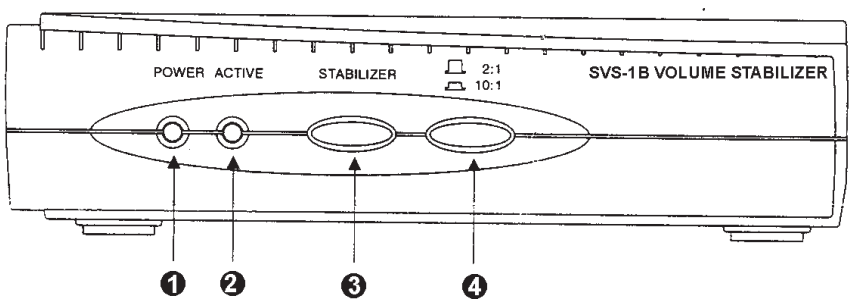
Figure 1
Front Panel



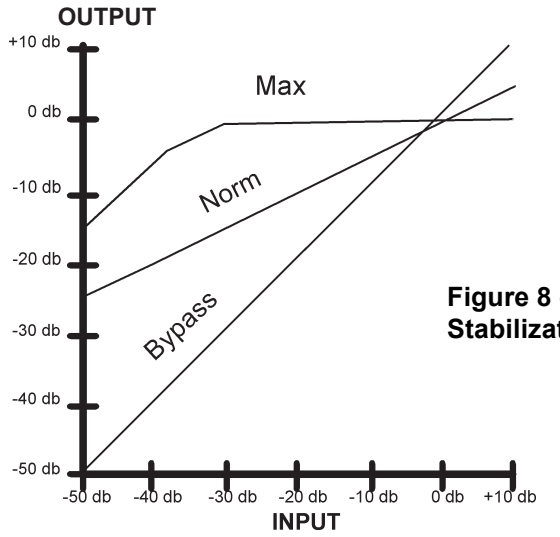


Figure 8 - Effect of the Volume Stabilization Setting on Output

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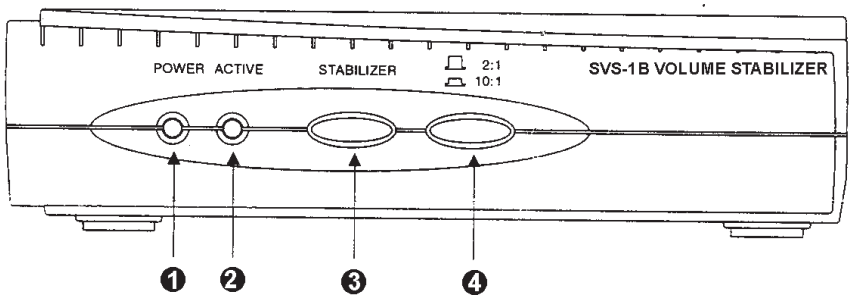

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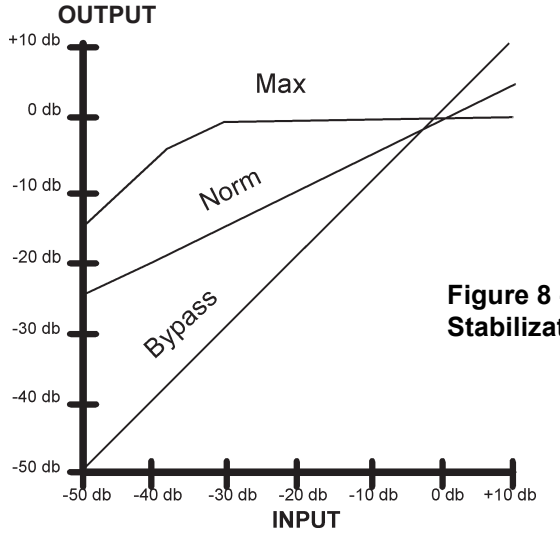

Figure 8 - Effect of the Volume Stabilization Setting on Output

Technical Information (cont.)

The SVS-1B has two volume stabilization ratios: 2:1 in the normal mode and about 10:1 in the Max mode. That is, for every increase of 10 db of the input signal, the output changes only 5 db in the normal mode and about 1 db in the Max mode. This allows you to select the amount of Volume Stabilization you desire for a given situation. In the bypass mode, the output signal is the same level as the input signal regardless of volume.

As you can see in figure 8, The SVS-1B's Volume Stabilizer switch allows you to select either 2:1 curve (NORM) or an almost flat volume stabilization (MAX). With the Volume Stabilizer switch set at the Norm position, notice that when the input signal varies from -30 db to +10db (40db change), the output changes from -15db to +5db (20db change). Therefore, the volume change is reduced by a factor of 2:1 (40/20=2). However, In the Max position a 40 db input change results in less than a 4 db output change, thus a slope of about 10:1.

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1) **POWER LIGHT (red) -** This indicates when power is applied to the unit and the POWER switch is ON.

2) **ACTIVE LIGHT (green)**- This indicates when the SVS-1B is in the active mode and not in the bypass mode.

3) **MODE SWITCH** - Push this button in to put the SVS-1B in the audio circuit. When this button is out, all of the electronics are bypassed

4) **VOLUME STABILIZER SWITCH -** This switch selects if you want Normal (2:1 slope) or Maximum (10:1 slope) Volume Stabilization.

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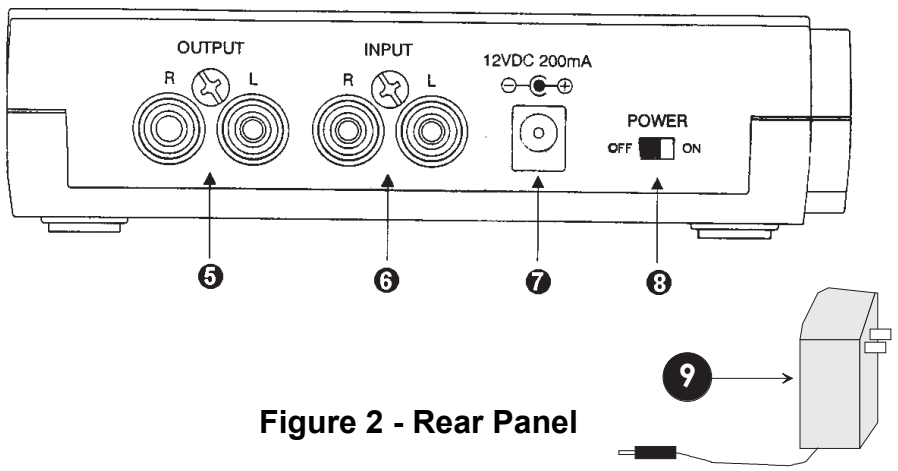

Figure 2 - Rear Panel

Technical Information

The Volume Stabilizer is a device designed to minimize unwanted volume fluctuations in music or other audio sources while maintaining the dynamics of the music. It works by monitoring the input signals and then adjusting a variable gain circuit to provide the proper output signal. It increases the signals below a threshold and decreases the signals above this threshold.

The SVS-1B changes only the volume just like a volume control. It does not change any frequency response or phase information for optimal sound quality and so it works with surround sound systems.

Refer to figure 7 at left, for the following discussion. The left and right audio signals are rectified, fed into a logarithmic amplifier and then summed together. The logarithmic converter is used to convert from the linear voltages to logarithmic voltages that follow the db curve to give proper volume adjustment. A single control channel is used to eliminate volume differences between the left and right channels that would cause imaging shifting of the sounds. This control signal is fed to the dual time constant circuit and then to the left and right variable gain amplifiers.

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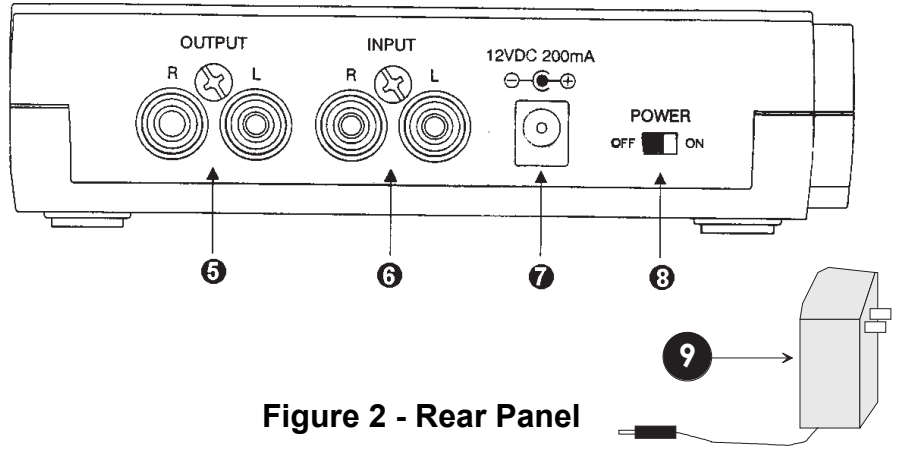

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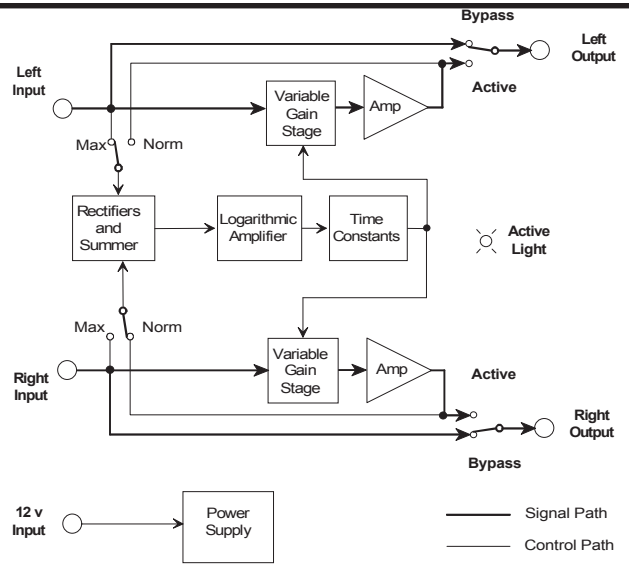

Figure 7
Block diagram of the SVS-1B

5) AUDIO OUT - Outputs to go to the input of a cassette deck or receiver.

6) AUDIO IN - Inputs from a standard line level audio output

7) POWER IN - Low voltage 12 V DC input. Plug the power connector from the AC adapter into this jack.

8) ON / OFF SWITCH – Turns on power to the unit.

9) WALL MOUNTED POWER TRANSFORMER - Supplies 12 VDC to the SVS-1B.

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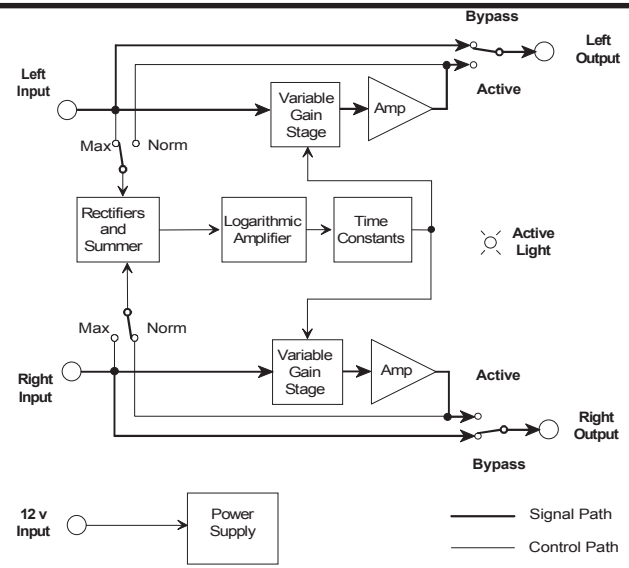

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Power Connection

Step 1: Connect the AC WALL TRANSFORMER JACK into the POWER IN connector on the SVS-1B. Then plug the AC WALL TRANSFORMER into a standard 120 VAC wall outlet.

Audio Connections

Inputs - The SVS-1B accepts standard RCA connectors with line level outputs from a VCR, satellite receiver, CD player or similar signal source. ***Note:*** *Do not connect to the variable output of a device (unless it is set at full volume) as the SVS-1B will not operate properly. The SVS-1B should be before the volume control in the audio chain.*

Outputs - The output of the SVS-1B uses standard RCA connectors to go to the inputs of a cassette deck, receiver or other device. ***Warning****: Do not connect the SVS-1B between the output of a preamplifier and the input of a power amplifier. This could result in excessive volume levels as the SVS-1B will try to bring the volume up to full line level.*

Refer to the diagrams on the next two pages for more connection information.

Figure 3 shows the SVS-1B installed directly between a CD player, VCR, DVD player, satellite receiver or other source and your receiver.

Figure 4 shows the SVS-1B installed between a source and the TV's audio inputs.

Figure 5 shows the SVS-1B installed in a tape loop. This way, you can listen to any source (such as the CD player or VCR) by selecting that source and then monitor the tape loop so you can hear the SVS-1B.

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Volume Stabilization Setting

The optimal setting of the Volume Stabilizer switch depends upon the type of music you listen to, how you intend to use the SVS-1B and your preferences. The Normal position gives the most natural effect with minimal effect on your music. The Max position gives the maximum volume stabilization. Here are some suggestions.

Switch Setting	Music Effect	Applications
Normal position	Gentle slope to slightly reduce volume changes	General purpose listening Tapes for quiet cars Brings up quiet dialogue
Max position	Maintains an almost constant volume level. Decreases loud music and increases soft music	• Tapes for automotive and airplane use • Minimal volume changes for home theater and satellite use • Background music

Active Light

The ACTIVE LIGHT show when the SVS-1B is in the active mode. If the light is out the unit is in the BYPASS mode or the power is removed.

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Operation

Power

Plug the wall transformer into any standard 120 VAC outlet. *Note: Be sure the volume control on your receiver or preamp is turned down when power is applied to the SVS-1B, or turn all components on together.*

Bypass Mode

With the MODE SWITCH in the "OUT" (bypass) position (ACTIVE LIGHT is off), there is no change to the audio signal. The SVS-1B will work with power on or off in this mode. Likewise, adjustment of the Volume Stabilization switch will not have any affect.

Active Mode

With the MODE SWITCH in the "IN" position (ACTIVE LIGHT is on), the SVS-1B Volume Stabilizer is in the signal path. The Volume Stabilization switch allows you to adjust either some volume stabilization (at the Norm position) to maximum volume stabilization (at the Max position).

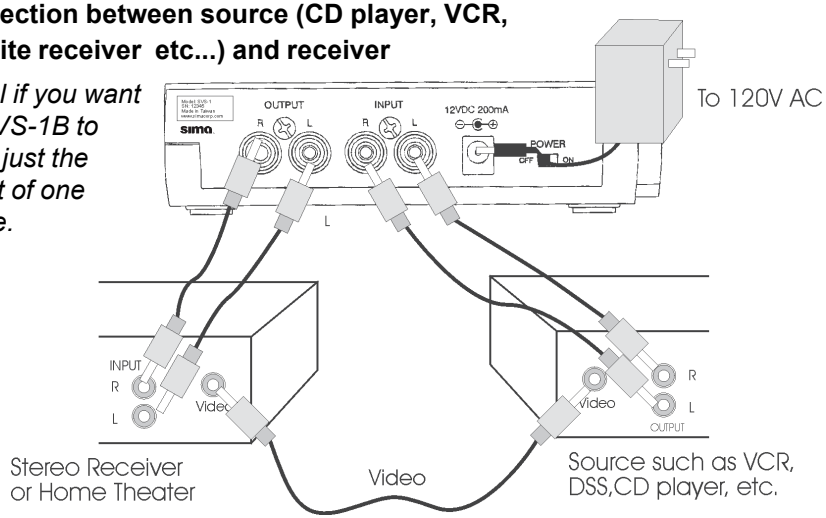
The MODE SWITCH toggles volume stabilization on and off. Typically, the volume will be slightly louder in the active position. This is because most music is recorded below the maximum level so the peak music does not saturate or clip.

The Volume Stabilizer has the biggest impact on music and video sound tracks when the softer passages are played. The volume and the sound quality will improve in the active mode. When the music is recorded "hot" (or very loud on whatever input is selected) then you will actually hear the volume decreased by the Volume Stabilizer. However, this is done automatically for you so you can just enjoy the music.

Figure 3

Connection between source (CD player, VCR, satellite receiver etc...) and receiver

Useful if you want the SVS-1B to affect just the output of one device.



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Operation

Power

Plug the wall transformer into any standard 120 VAC outlet. *Note: Be sure the volume control on your receiver or preamp is turned down when power is applied to the SVS-1B, or turn all components on together.*

Bypass Mode

With the MODE SWITCH in the "OUT" (bypass) position (ACTIVE LIGHT is off), there is no change to the audio signal. The SVS-1B will work with power on or off in this mode. Likewise, adjustment of the Volume Stabilization switch will not have any affect.

Active Mode

With the MODE SWITCH in the "IN" position (ACTIVE LIGHT is on), the SVS-1B Volume Stabilizer is in the signal path. The Volume Stabilization switch allows you to adjust either some volume stabilization (at the Norm position) to maximum volume stabilization (at the Max position).

The MODE SWITCH toggles volume stabilization on and off. Typically, the volume will be slightly louder in the active position. This is because most music is recorded below the maximum level so the peak music does not saturate or clip.

The Volume Stabilizer has the biggest impact on music and video sound tracks when the softer passages are played. The volume and the sound quality will improve in the active mode. When the music is recorded "hot" (or very loud on whatever input is selected) then you will actually hear the volume decreased by the Volume Stabilizer. However, this is done automatically for you so you can just enjoy the music.

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Figure 3

Connection between source (CD player, VCR, satellite receiver etc...) and receiver

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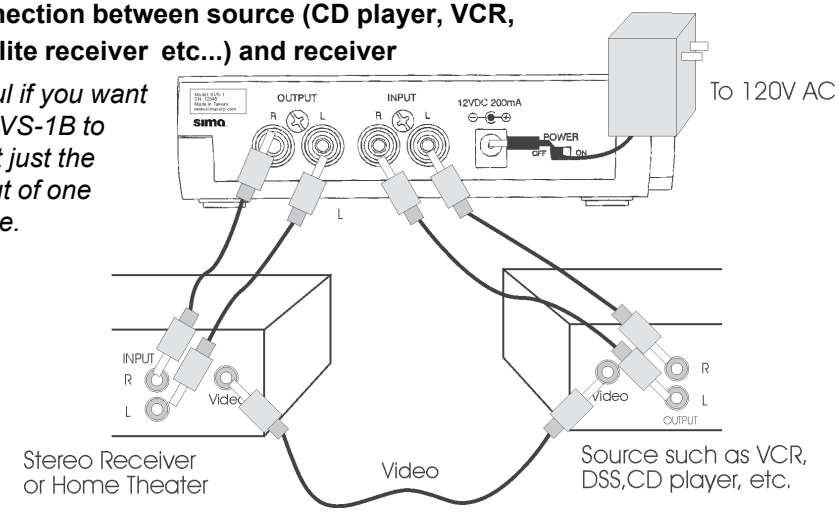


Figure 4

Connection between a source (VCR, satellite receiver or cable box) and a TV with AV jacks

Useful if you want the SVS-1B to minimize sound changes from your VCR or satellite receiver on your TV

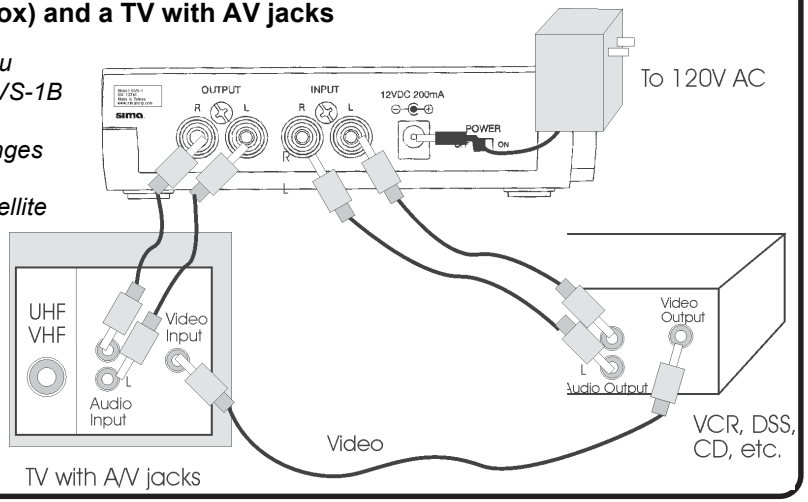
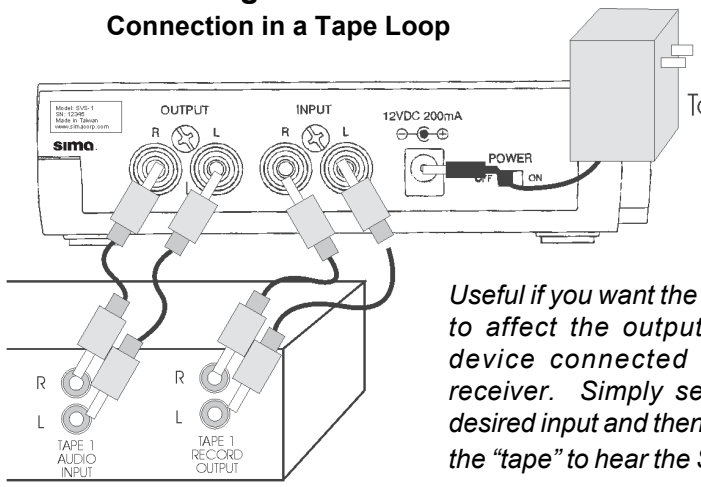


Figure 5

Connection in a Tape Loop



Useful if you want the SVS-1B to affect the output of any device connected to your receiver. Simply select the desired input and then monitor the "tape" to hear the SVS-1B.

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Figure 4

Connection between a source (VCR, satellite receiver or cable box) and a TV with AV jacks

Useful if you want the SVS-1B to minimize sound changes from your VCR or satellite receiver on your TV

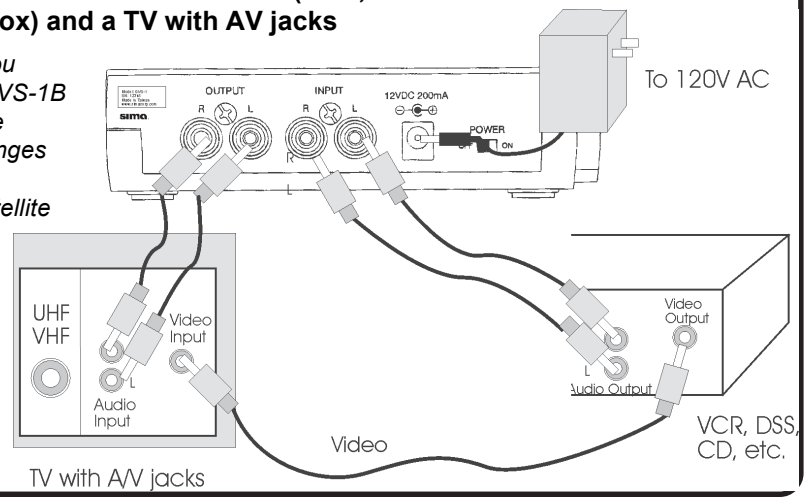

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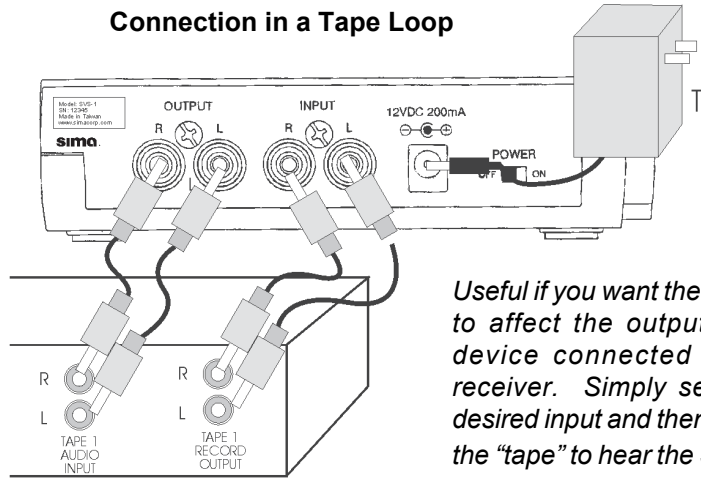
Figure 5

Connection in a Tape Loop



Useful if you want the SVS-1B to affect the output of any device connected to your receiver. Simply select the desired input and then monitor the "tape" to hear the SVS-1B.